The ß-endorphin content of amniotic fluid during labor

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ß-endorphin (ß-EP) - the most potent endogenous opiate- is a polypeptide of 30 amino acids and is secreted by the pituitary gland. As in several other biological fluids ß-EP activity also was found in the amniotic fluid (1,2). We determined ß-EP activity in term amniotic fluids at different times during the birth process and studied the dynamic characteristics of endorphin secretion into the amniotic fluid by sequential sampling during labor.

A total of 100 amniotic fluid samples from 89 women were examined. Samples were obtained either transvaginally or at cesarean section. ß-EP activity was determined by means of a radioimmunoassay (New England Nuclear) without previous extraction.

The mean values of ß-EP activity in the amniotic fluid at different times of the birth process did not show any significant differences (Table 1). The median values of ß-EP activity in amniotic fluid at vaginal delivery were higher in women who had epidural analgesia or who had received pethidin im, and lowest in mothers without any analgesia.

Table 1: ß-Endorphin activity in amniotic fluid

	n	ß-EP (pg/ml)	SD	range
Induction (amniotomy)	8	121.0	36.0	70-185
Early first stage	33	119.8	52.1	50-256
Late first stage	19	115.0	48.2	55-200
Vaginal delivery	30	120.4	48.8	50-255
Cesarean section	10	130.9	51.1	76-220

In contrast to earlier studies showing a relationship between EP- activity in amniotic fluid and fetal distress (1) and reports of a correlation between fetal plasma ß-EP levels and umbilical artery pH and pO2 (4), we found no relationship between parameters of fetal distress and the ß-EP activity in the amniotic fluid: though ß-EP activity was significantly lower in meconiumstained amniotic fluid samples the presence of late or variable decelerations or of fetal bradycardia was not associated with higher or lower ß-EP values, and there was no relationship between umbilical artery pH and the ß-EP activity in the amniotic fluid at vaginal delivery.

This lack of correlation between fetal distress and ß-EP activity in amniotic fluid is not surprising when looking at the results of sequential amniotic fluid sampling during labor (Table 2). Though individual ß-EP levels ran-

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ged from 55 to 222 pg/ml, the ß-EP activity in amniotic fluid remained almost constant in each parturient from the first stage of labor through delivery over time periods of up to 10 hours (WILCOXON signed rank test: $p > 0,05$).

The ß-endorphin system is activated during labor and maternal plasma levels peak at delivery (3). Our study provides further evidence for a fetal or placental origin of this peptide. We were able to show that ß-EP activity in the amniotic fluid remains constant during labor and probably does not reflect fetal well-being or distress.

Table 2: Serial determinations of ß-Endorphin activity in amniotic fluid during labor (values in pg/ml)

Pat.Nr.	Cervix: ≤3cm	4-7cm	8-10cm	Delivery
1		220		230
2	60			65
3			100	80
4			70	70
5			55	60
6	165	205		
7	155	155		165
8			80	70
9	110	105	105	
10		90		90
11		190	175	
12			206	200
13		129		134
14	156	166	160	163
15		105		85
16		122		189
17			135	140
18		120		150
19		115		107

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